PROJECT
"TOWN HALL"
AIR LAUNCHED PHOTO RECONNAISSANCE SATELLITE

SECRET

ORIGINAL PROPOSAL

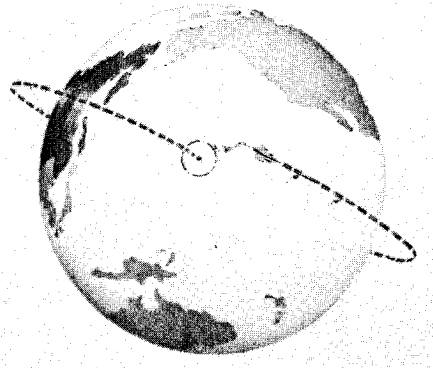
Concept

AIR LAUNCH FOR:

- QUICK REACTION
- LAUNCH AND RECOVERY FLEXIBILITY
- SECURE OPERATIONS
- INCREASED PAYLOAD CAPABILITY
- OMNI-DIRECTIONAL TARGET APPROACH

SINGLE PASS SYSTEM FOR:

- SIMPLICITY
- INVULNERABILITY

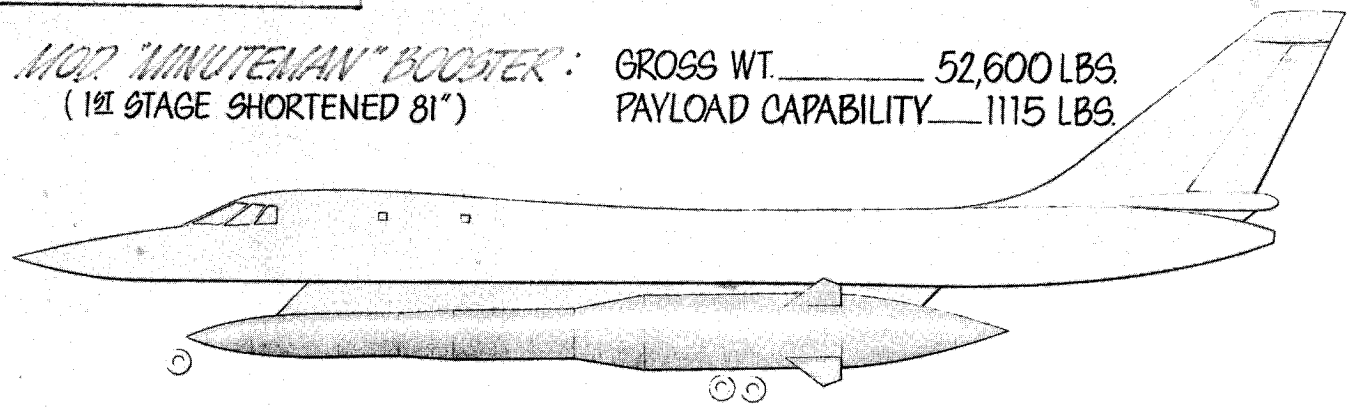


Growth Capability to Multiple Pass Operation

Configuration

MOD "MINUTEMAN" BOOSTER: (1ST STAGE SHORTENED 81")

GROSS WT. _____ 52,600 LBS.
PAYLOAD CAPABILITY ___ 1115 LBS.



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SUBSEQUENT STUDIES

MISSILE DESIGN

- INCREASED PAYLOAD BY INCREASED BOOSTER SIZE (MINUTEMAN AND NEW BOOSTERS)
- EVALUATION OF ENVIRONMENTAL EFFECTS ON MOTORS

AIRPLANE STUDIES

- DETERMINE MAX. BOOSTER SIZE COMPATIBLE WITH B-58
- WIND TUNNEL TEST PROGRAM & A/P PERFORMANCE STUDY

PERFORMANCE

- OPTIMUM COMBINATION OF MISSILE/B-58 PERFORMANCE
- COMPARISON OF GROUND AND AIR LAUNCHING

PAYLOAD

- ADVANCED GUIDANCE AND CONTROL CONCEPTS
- MULTIPLE PASS REQUIREMENTS AND CAPABILITIES

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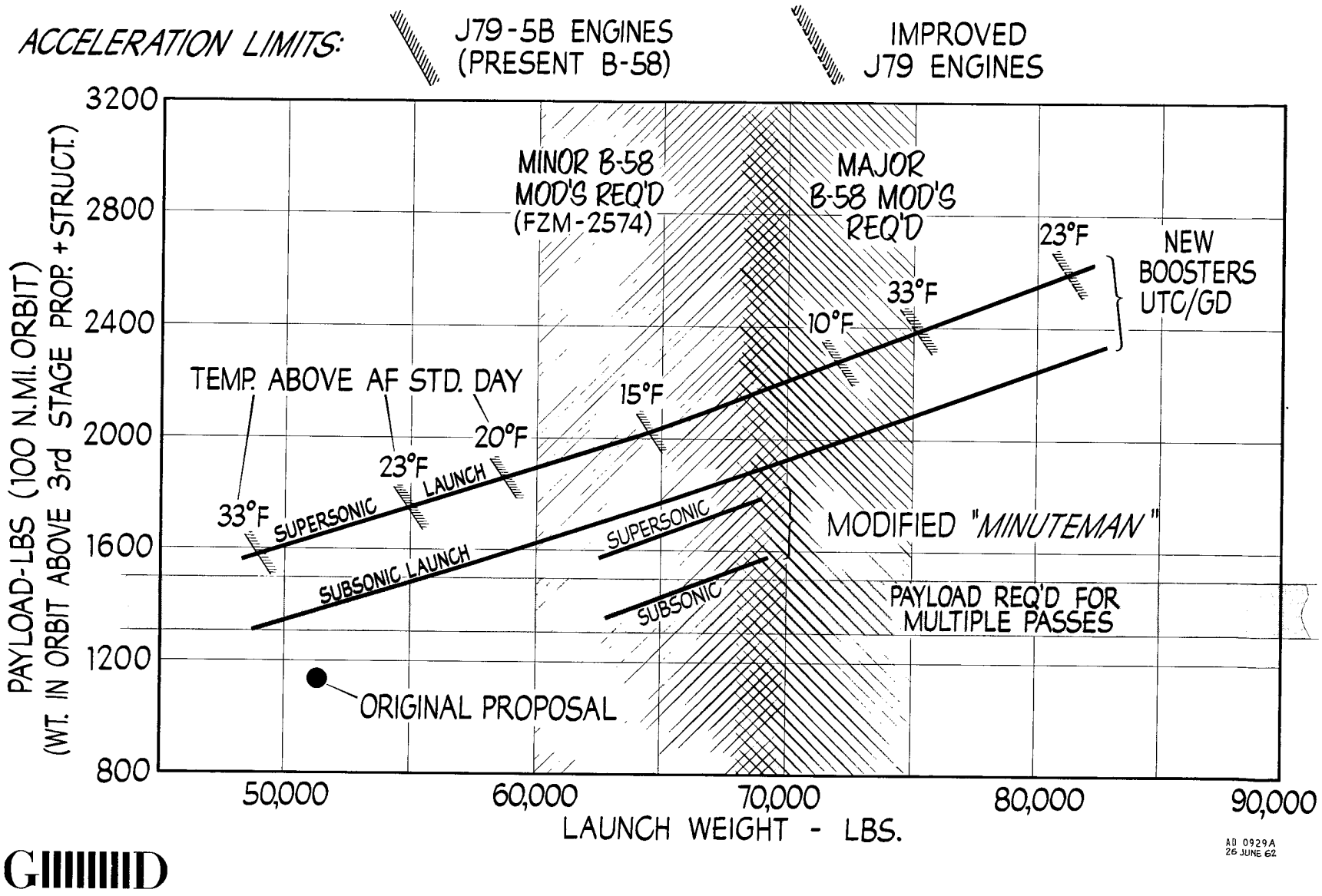
SUMMARY OF STUDY RESULTS



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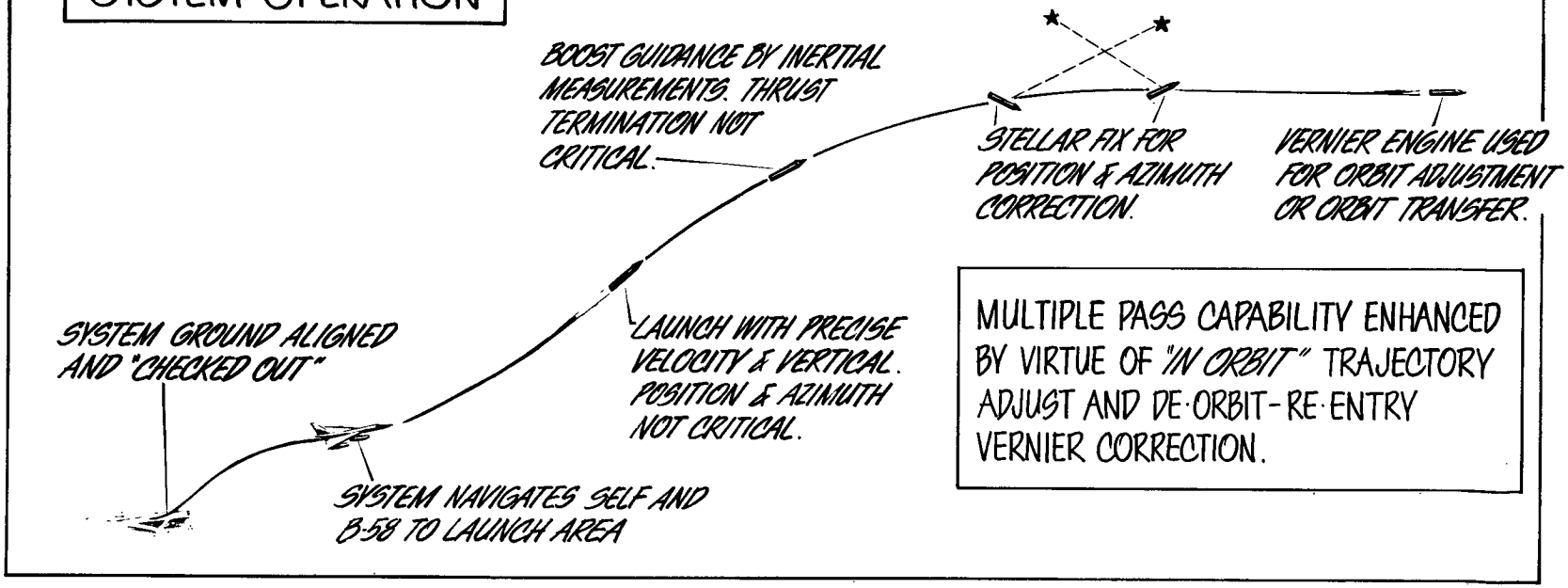
INTEGRATED GUIDANCE & CONTROL SYSTEM

(Based on system under developm't by United Aircraft)

SYSTEM COMPONENTS

- HIGH QUALITY INERTIAL PLATFORM
- WIDE ANGLE STAR MONITOR
- MEGACYCLE DIGITAL COMPUTER
- HYPERGOLIC VERNIER PROPULSION
- COLD GAS ATTITUDE CONT'L

SYSTEM OPERATION



MULTIPLE PASS CAPABILITY ENHANCED BY VIRTUE OF "IN ORBIT" TRAJECTORY ADJUST AND DE-ORBIT-RE-ENTRY VERNIER CORRECTION.

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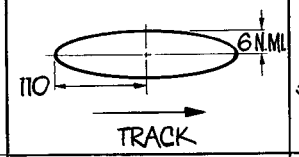
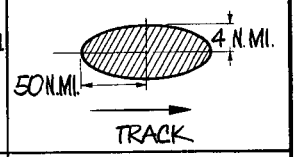
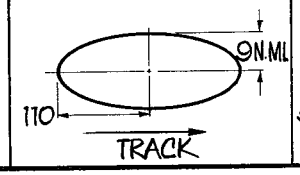
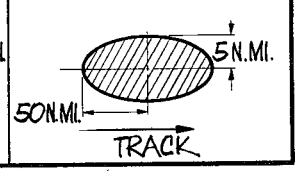
INTEGRATED VS. CONVENTIONAL SYSTEM COMPARISON

PERFORMANCE FEATURES

MULTIPLE PASS MISSION
(8 passes, no tracking)

	CONVENTIONAL PURE INERTIAL SYSTEM	INTEGRATED STELLAR INERTIAL G-CP SYS.
ON-ORBIT POSITION ACCURACY		
DE-ORBIT RECOVERY ACCURACY		

OPERATIONAL FEATURES

FOR INTEGRATED SYSTEM

- Launch w/o accurate Pos. & Az.
- Orbit changes possible during mission
- Thrust-termination not critical
- Vernier recovery guidance possible

AVAILABILITY

- Conventional system —— 9 months
- Integrated system —— 18 months

RECOMMENDED APPROACH

- Interim conventional system
- Grow into fully integrated system

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SYSTEM POTENTIAL

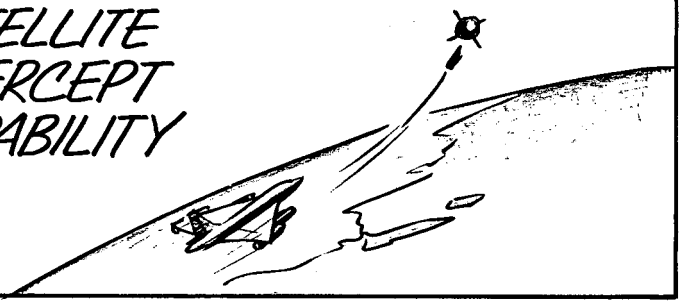
B-58

MINUTEMAN

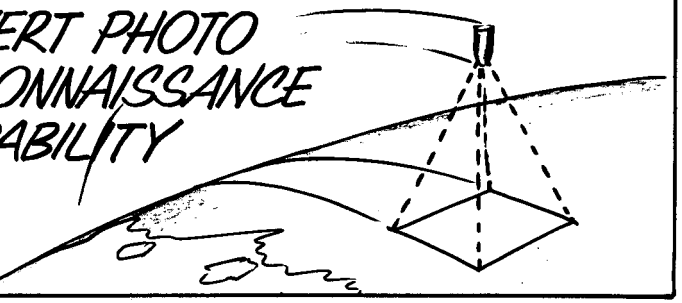
MOBILE (INEXPENSIVE)
LAUNCH CAPABILITY

=

SATELLITE
INTERCEPT
CAPABILITY



COVERT PHOTO
RECONNAISSANCE
CAPABILITY



OTHER APPLICATIONS

- EQUATORIAL SATELLITES
- ADVANCED ICBM POTENTIAL
- MOBILE SPACE PROBES

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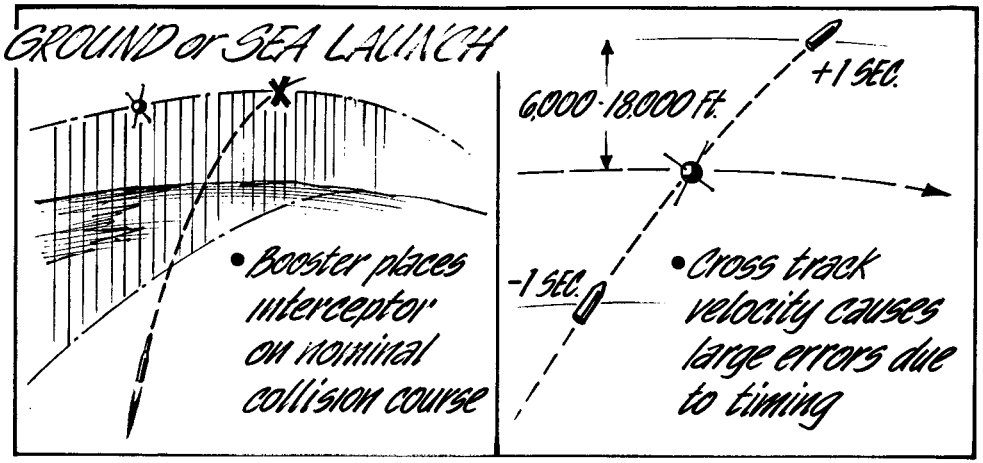
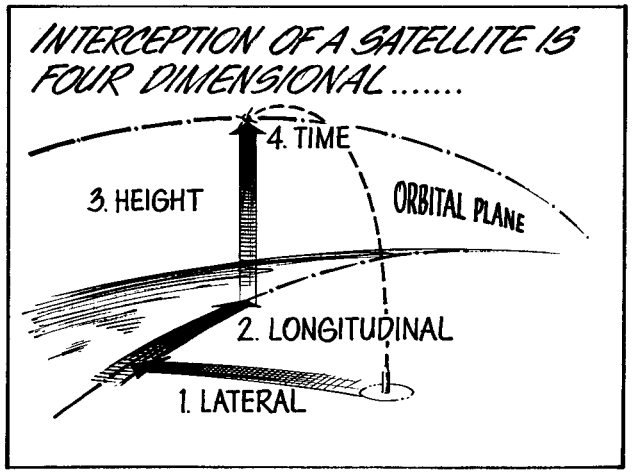
SATELLITE INTERCEPTOR SYSTEM ADO-40

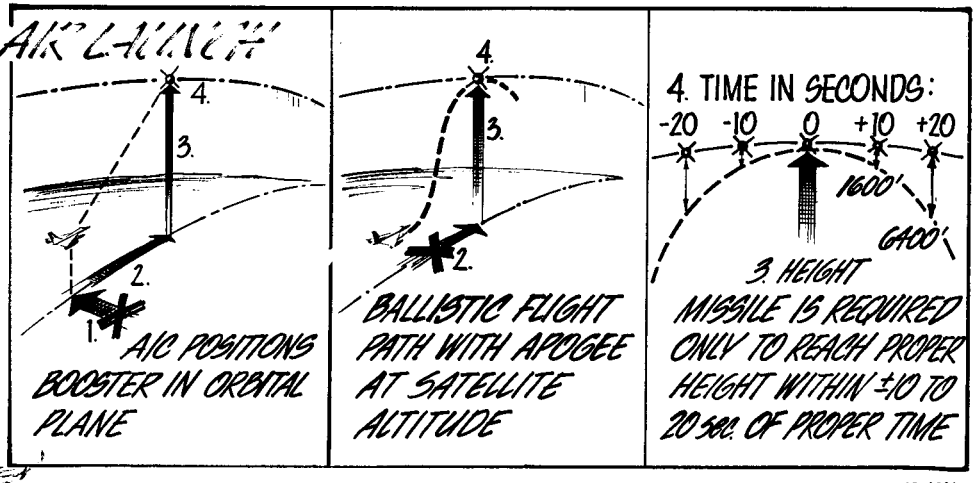
REQUIREMENTS

- EARLY CAPABILITY
- DIRECT INTERCEPT
- COLD WAR SYSTEM
- COVERT CAPABILITY
- NUCLEAR or NON-NUCLEAR KILL
- EXISTING BOOSTERS
- 800-1000 N.MI. CAPABILITY
- COMPATIBLE WITH SPADATS

LAUNCH TECHNIQUES







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COMPARISON OF LAUNCH TECHNIQUES

APPROACH

ANALYSIS OF:

- SPADATS CAPABILITY/ACCURACY
- EFFECT OF TERMINAL GEOMETRY ON MISS DISTANCE
- ERROR CORRECTION CAPABILITY
- WARHEAD DEPLOYMENT ERRORS

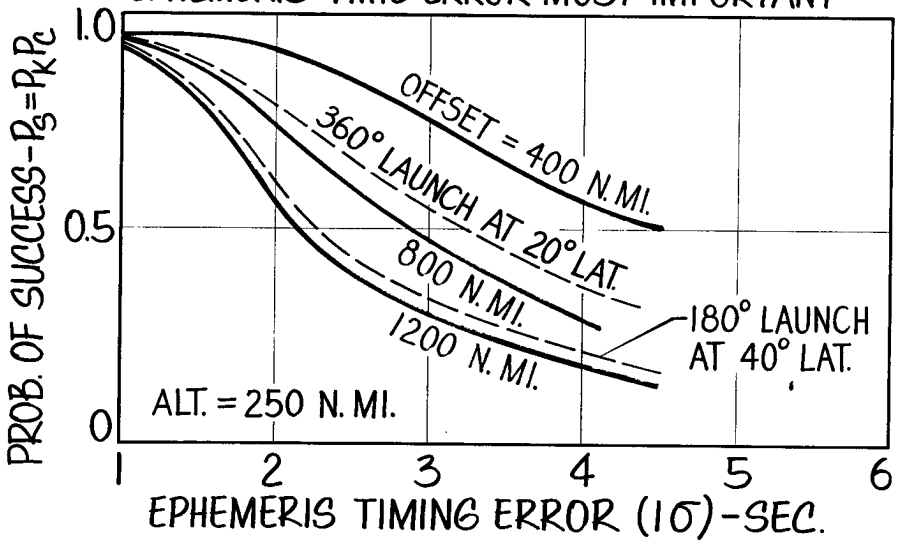
TO DETERMINE:

- INTERCEPT GEOMETRY FOR MAXIMUM EFFECTIVENESS
- INFLUENCE OF ERRORS

RESULTS

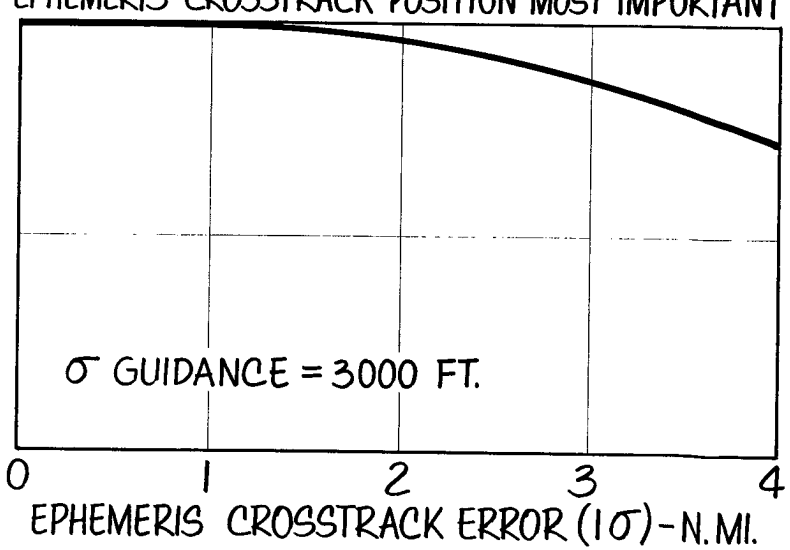
SURFACE LAUNCH

EPHEMERIS TIME ERROR MOST IMPORTANT



AIR LAUNCH

EPHEMERIS CROSSTRACK POSITION MOST IMPORTANT



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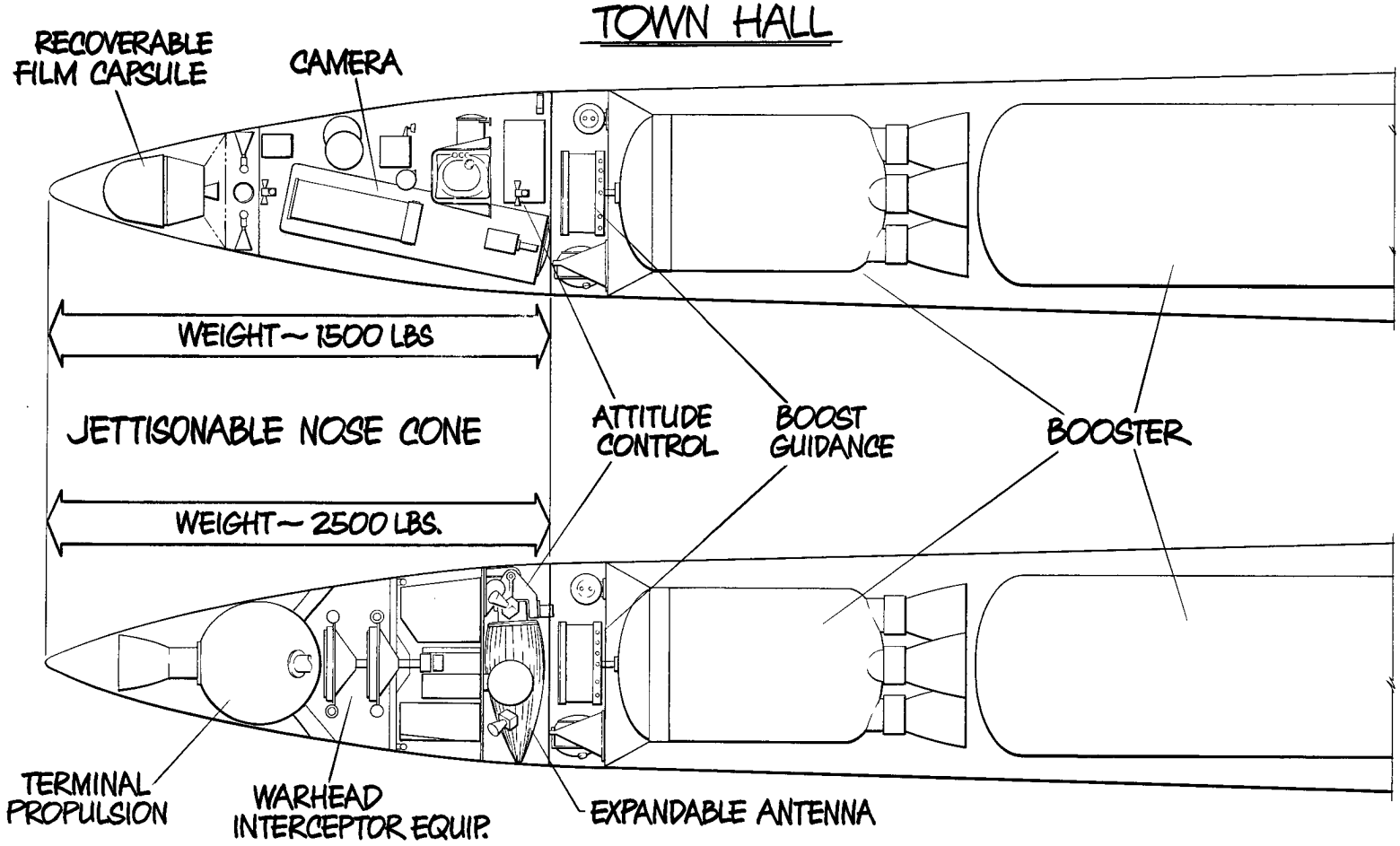
COMPARISON OF TOWN HALL & SATELLITE INTERCEPTOR



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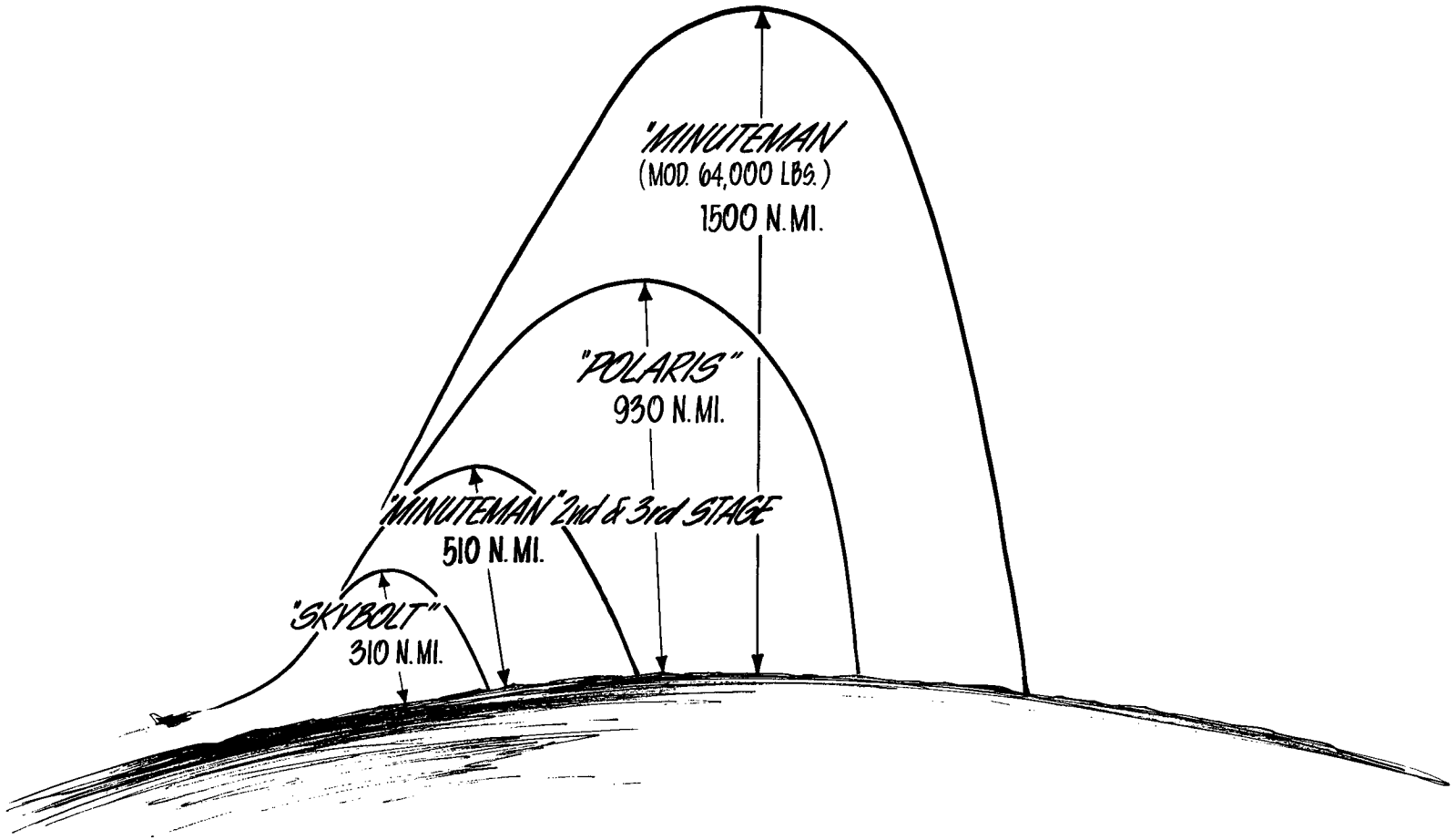
BOOSTER CAPABILITIES



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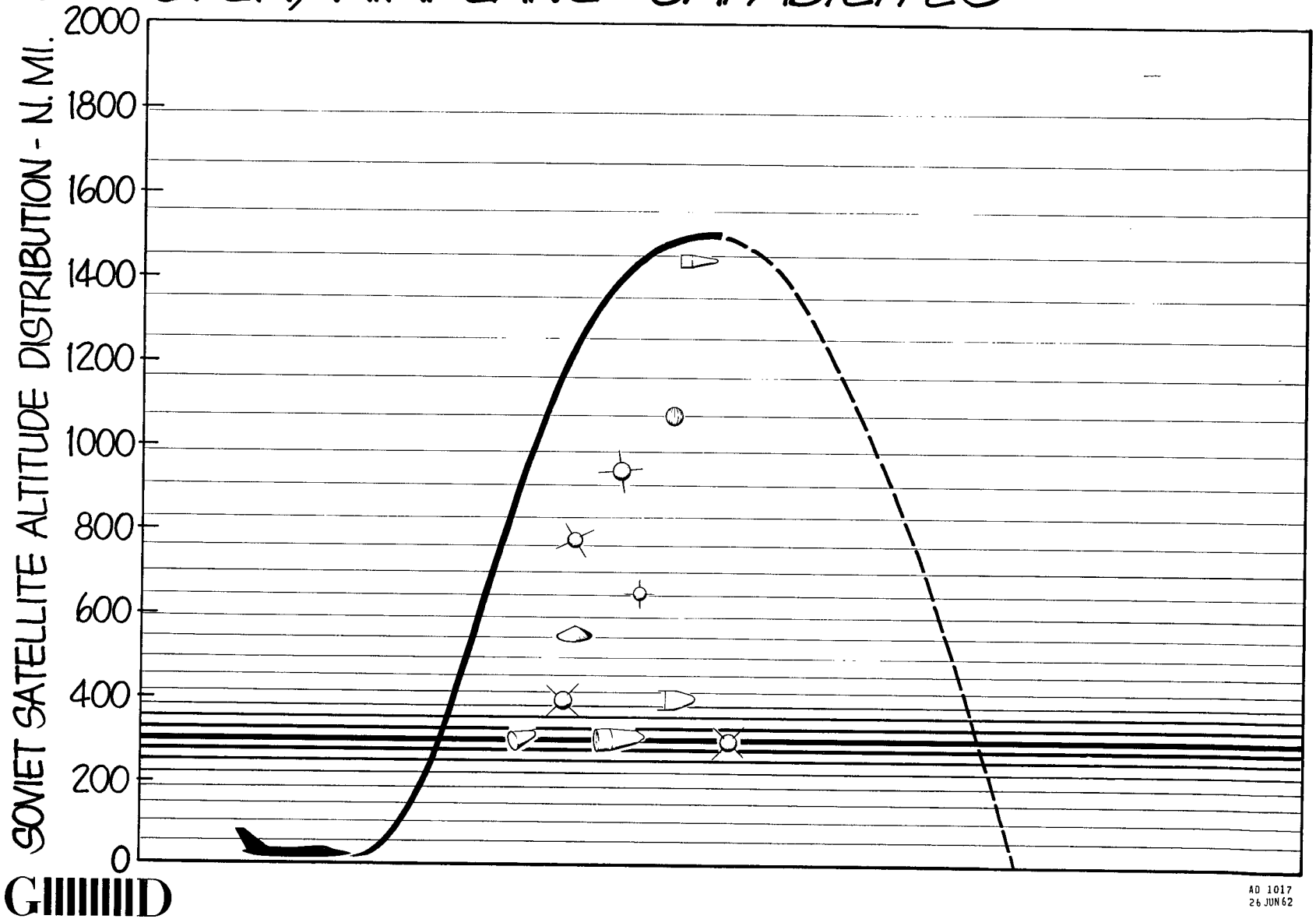
BOOSTER/AIRPLANE CAPABILITES



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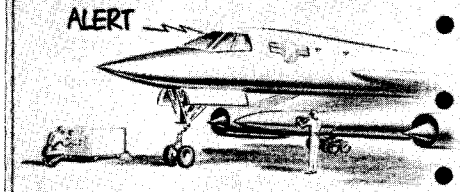
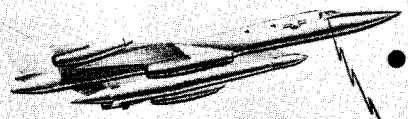
SYSTEM OPERATION

PRE-FLIGHT



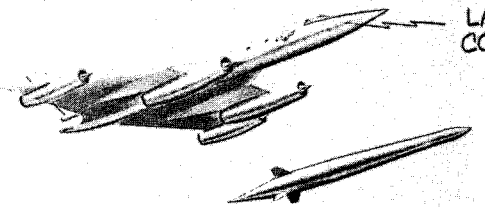
- AIRCRAFT PREPARED FOR FLIGHT
- MISSILE GUIDANCE ALIGNED AND TRIMMED
- INITIAL EPHEMERIS AND TRAJECTORY LOADED
- SYSTEM CHECK-OUT

COMPOSITE FLIGHT



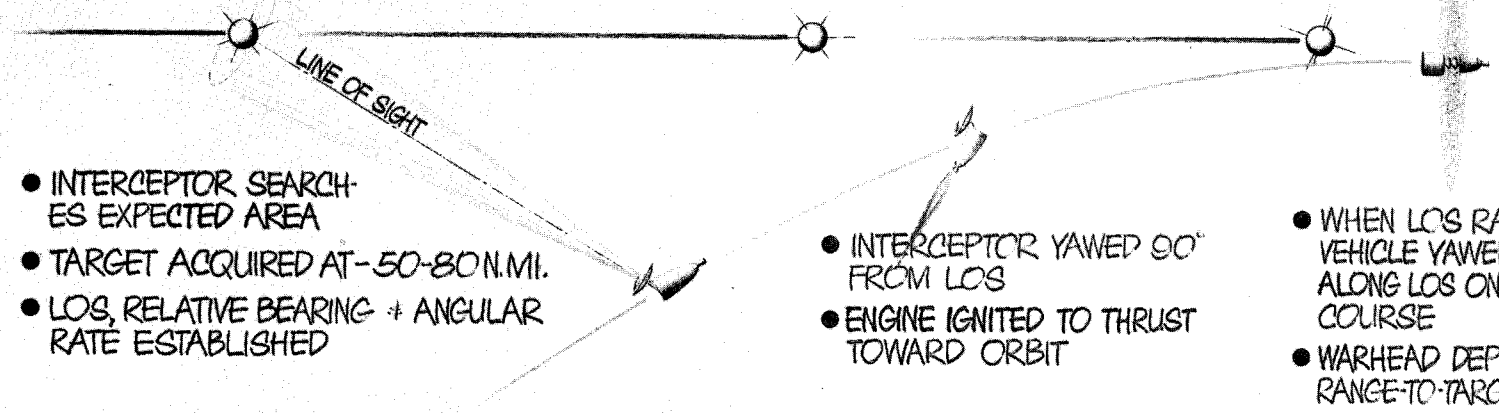
- AIRCRAFT FLOWN TO PRE-COMPUTED COURSE
- MISSILE GUIDANCE NAVIGATES AIRCRAFT
- UPDATED EPHEMERIS ENTERED

BOOST



- LAUNCH POINT DETERMINED BY GUIDANCE COMPUTER
- BOOSTER BURNS OUT WITH VELOCITY IN ORBIT PLANE
- INTERCEPTOR SEPARATES FROM BOOSTER

TERMINAL PHASE



- INTERCEPTOR SEARCHES EXPECTED AREA
- TARGET ACQUIRED AT-50-80 N.MI.
- LOS, RELATIVE BEARING + ANGULAR RATE ESTABLISHED
- INTERCEPTOR YAWED 90° FROM LOS
- ENGINE IGNITED TO THRUST TOWARD ORBIT
- WHEN LOS RATE IS ZERO VEHICLE YAWED TO THRUST ALONG LOS ON COLLISION COURSE
- WARHEAD DEPLOYED ON RANGE-TO-TARGET BASIS

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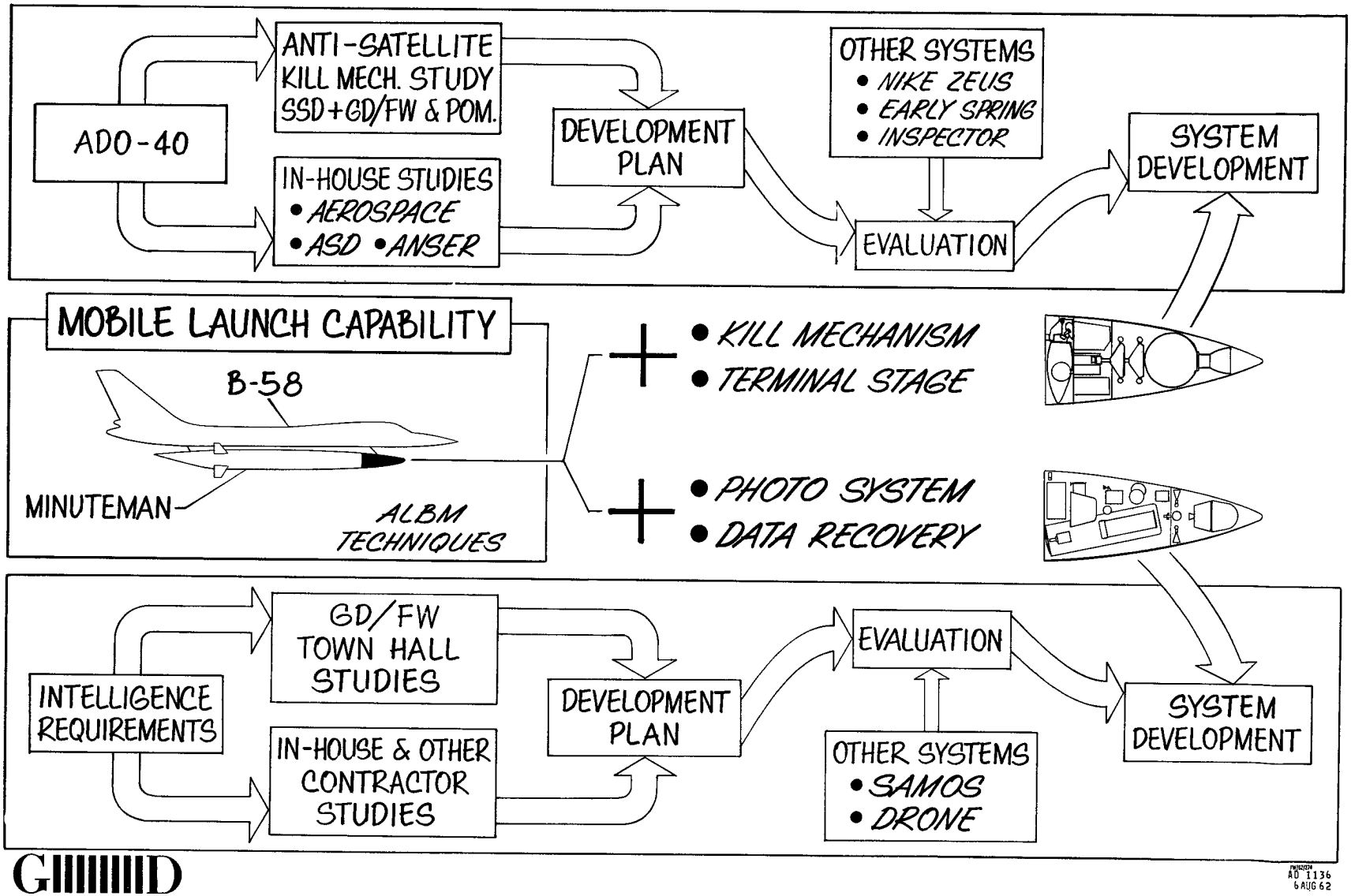
ADO-40/TOWN HALL RELATIONSHIP



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CONCLUSIONS AND RECOMMENDATIONS

- ADO-40 system and various covert recon. systems are being studied and evaluated by separate contractor and USAF groups.
- This dual separate approach may well result in choice of two systems, optimum for each mission, but entirely different in hardware items.
- The mobile launch concept is competitive for each mission and should be evaluated simultaneously by USAF personnel cognizant of both missions.
- Choice of mobile launch concept could lead to greatly reduced development costs, operational costs and reliability improvements through adoption of a standard boost vehicle for dual purpose use.

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